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UNCCD **Convention to Combat Desertification**

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Committee on Science and Technology

Report of the Committee on Science and Technology on its fourth special session, held in Cancun, Mexico, from 9 to 12 March 2015

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I. Opening of the session

1. The fourth special session of the Committee on Science and Technology (CST S-4) was held under the chairmanship of Mr. Uriel Safriel (Israel) in Cancun, Mexico, from 9 to 12 March 2015. The Committee held eight meetings from 9 to 12 March 2015.

2. At its first meeting, on 9 March 2015, the Chair of the Committee opened the session and welcomed all Parties and observers.

3. At the same meeting, opening statements were made by Mr. Roberto Borge Angulo, Governor of the State of Quintana Roo; Mr. Jorge Rescala Perez, General Director of the National Forestry Commission, Mexico; and the Executive Secretary of the United Nations Convention to Combat Desertification (UNCCD).

4. Statements were also made by the representatives of Costa Rica (on behalf of Group of Latin America and the Caribbean), the European Union and Turkey.

II. Organizational matters

A. Adoption of the agenda and organization of work (Agenda item 1)

5. At its first meeting, on 9 March 2015, the Committee considered agenda item 1, "Adoption of the agenda and organization of work", for which it had before it a note by the secretariat contained in document ICCD/CST(S-4)/1.

6. At the same meeting, the Committee adopted the provisional agenda as contained in document ICCD/CST(S-4)/1, and approved the organization of work for the session, as contained in annex II of the provisional agenda. The agenda read as follows:

1. Adoption of the agenda and organization of work.

2. Combating desertification/land degradation and drought for poverty reduction and sustainable development: the contribution of science, technology, traditional knowledge and practices:

   (a) Diagnosis of constraints: vulnerability of agro-ecosystems and populations in affected regions;

   (b) Responses: land-based approaches to adaptation and knowledge transfer;

   (c) Monitoring and assessment: how to evaluate the effectiveness of adaptation interventions.

3. Provision of scientific advice on the topic: "Explore the options to achieve land degradation neutrality in the context of sustainable development".

4. Adoption of the report of the Committee on Science and Technology.

7. At its first meeting, on 9 March 2015, the Committee elected by acclamation Mr. Matthias Magunda (Uganda), Mr. Oleg Guchgeldiyev (Turkmenistan), and Ms. Nicole Edel Laure Bernex Weiss de Falen (Peru) as Vice-Chairs to complete the terms of Mr. Chehat

Fouad (Algeria), Mr. Allaadeen Mohamad Abdalla Al-Sharjabi (Yemen) and Ms. Sonia Gonzalez (Peru).

8. Also at its first meeting, the Commission appointed the Vice-Chair of the Committee, Matthias Magunda (Uganda), as the Rapporteur for the session.

B. Proceedings of the UNCCD 3rd Scientific Conference

9. The Committee convened the UNCCD 3rd Scientific Conference, which took place from the first to the seventh meetings of the CST S-4, on 9–12 March 2015 under agenda item 2 (a)–(c).

10. At its first meeting, on 9 March 2015, the Committee considered agenda item 2 and had before it notes by the secretariat contained in document ICCD/CST(S-4)/2 and Corr.1.

11. Opening statements were made by Mr. Bernard Hubert, Chair of the Scientific and Traditional Knowledge for Sustainable Development Consortium and President of Agropolis International; Mr. William Albert Payne, Chair of the Scientific Advisory Committee (SAC) for the UNCCD 3rd Scientific Conference and Dean and Professor at the College of Agriculture, Biotechnology and Natural Resources of the University of Nevada in the United States of America; and Her Excellency Ms. Tarja Halonen, UNCCD Drylands Ambassador and former President of Finland.

12. A keynote address was delivered by Mr. Mark Reed, Director of the Knowledge EXCHANGE Research Centre at Birmingham City University in the United Kingdom of Great Britain and Northern Ireland.

13. An interactive discussion ensued, during which the speakers responded to the comments made and questions posed by the representatives of the Haryana Forest Development Corporation in India, Trent University (Canada), the Forest Ministry of Turkey and the Ministry of Higher Education and Scientific Research of Mauritania.

1. Session 1: Diagnosis of constraints

14. At its second and fourth meetings, on 9 and 10 March 2015, respectively, the Committee considered sub-item 2 (a).

15. The Chair of the Committee on Science and Technology (CST) opened the second meeting on 9 March 2015. Session 1 was chaired and moderated by Mr. Payne.

16. A keynote address was delivered by the Chair of the CST.

17. An interactive discussion ensued, during which the keynote speaker responded to the comments made and questions posed by the representatives of Trent University (Canada); the Ministry of Forestry, Wildlife and Fisheries (Pakistan); the University of Oklahoma; the Kuwait Institute for Scientific Research; the Desert Research Center (Egypt); and the Conseil National de l'Environnement pour un Développement Durable (Niger).

18. During session 1 of the fourth meeting of the Committee, also on 10 March 2015, chaired and moderated by Mr. Payne, presentations and closing remarks were made by the following rapporteurs of session 1: Mr. Nabil Ben Khatra, Sahara and Sahel Observatory (OSS) (Tunisia); Ms. Miriam Díaz, Center for Ecology and Arid Lands at the National Experimental University Francisco de Miranda (Venezuela); Mr. Klaus Kellner, National Research Foundation of South Africa; Ms. Mélanie Requier-Desjardins, International Center for Advanced Mediterranean Agronomic Studies, Mediterranean Agronomic Institute of Montpellier (France); and Mr. Oleg Guchgeldiyev, National Institute of Desert, Flora and Fauna (Turkmenistan).

2. Session 2: Responses

19. At its third and fourth meetings, on 10 March 2015, the Committee considered sub-item 2 (b).

20. Mr. Matthias Magunda, Vice-Chair of the CST and researcher at the National Agricultural Research Institution in Uganda, chaired and moderated session 2, held during the third meeting of the Committee.

21. A keynote address was delivered by Mr. Richard Thomas, Director of the Dryland Systems CGIAR Research Program of the International Center for Agricultural Research in the Dry Area (ICARDA) in Jordan.

22. An interactive discussion ensued, during which the keynote speaker responded to the comments made and questions posed by the representatives of the National Bureau to Combat Desertification of China; the Ministry of Climate Change of Pakistan; Central de Organizaciones Campesinas y Populares of Mexico; University of Sassari (Italy); Abdou Moumouni University (Niger); Ministry of Agriculture of Eritrea; the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) (Germany); and Natural Resources Management, Ministry of Mahaweli Development and Environment of Sri Lanka.

23. The Chair of the CST then opened the fourth meeting, also held on 10 March 2015. A session on the role of local knowledge in addressing desertification/land degradation and drought (DLDD) was chaired and moderated by Ms. Mariam Akthar-Schuster, member of the SAC, member of the Science-Policy Interface (SPI) and Coordinator of the Advisory Board of DesertNet International.

24. A keynote address was delivered by Ms. Úrsula Oswald Spring, Professor of the Regional Multidisciplinary Research Centre at the National Autonomous University of Mexico.

25. An interactive discussion ensued, during which the keynote speaker responded to the comments made and questions posed by the representatives of the United Nations Economic Commission for Latin America and the Caribbean, the National School of Engineers in Forestry (Morocco) and GIZ.

26. Also at the fourth meeting of the Committee, at the session chaired and moderated by Mr. Matthias Magunda, , presentations and closing remarks were made by the following rapporteurs of session 2: Mr. Chandrashekhar M. Biradar, ICARDA in Jordan; Ms. Maxime Thibon, OSS; Ms. Nathalie van Haren, Both ENDS (Netherlands); Mr. Patrice Burger, Centre d'Actions et de Réalisations Internationales (France) and Ms. Nicole Edel Laure Bernex Weiss de Falen, Pontifical Catholic University (Peru).

27. An interactive discussion ensued, during which the rapporteurs responded to the comments made and questions posed by the representatives of Chapingo Autonomous University (Mexico); Universidad Nacional Agraria La Molina (Peru); National Institute for the Semi-Arid (Brazil); National School of Engineers in Forestry (Morocco); and the Center for Ecology and Arid Lands at the National Experimental University Francisco de Miranda (Venezuela).

3. Session 3: Monitoring and assessment

28. At its fifth and sixth meetings, on 11 and 12 March 2015, the Committee considered sub-item 2 (c).

29. The Chair of the CST opened the fifth meeting. Session 3 was chaired by Mr. Tao Wang, member of the SAC, member of the SPI, and Director and Research Professor of the Key Laboratory of Desert and Desertification at the Chinese Academy of Sciences, China.

30. A keynote address was delivered by Ms. Elena Maria Abraham, Director of the Argentine Dryland Research Institute of the National Scientific and Technical Research Council.

31. An interactive discussion ensued, during which the keynote speaker responded to the comments made and questions posed by the representatives of GIZ; the Ministry of Agriculture of Eritrea; Coventry University (United Kingdom); the College of Agricultural Engineering of Santiago del Estero (Argentina); and Haut Commissariat aux Eaux et Forêts et à la Lutte Contre la Désertification High Commission for Water and Forest and Fight against Desertification of Morocco.

32. The Chair of the CST chaired and moderated a session on synergies between the Rio conventions held at the sixth meeting (12 March 2015).

33. A keynote address was delivered via Skype by Mr. Graham Von Maltitz, researcher at the Council for Scientific and Industrial Research (CSIR), South Africa.

34. An interactive discussion ensued, during which the keynote speaker responded to the comments made and questions posed by the representatives of Trent University (Canada) and GIZ.

35. Keynote addresses were also made by Mr. Tomasz Chruszczow, Chair of the Subsidiary Body for Scientific and Technological Advice (SBSTA) of the United Nations Framework Convention on Climate Change (UNFCCC); and Ms. Graciela Metternicht, Director of the Institute of Environmental Studies at the University of New South Wales (UNSW), Australia.

36. An interactive discussion ensued, during which the keynote speakers responded to the comments made and questions posed by the representatives of Trent University (Canada); the Ministry of Environment, Natural Resources, Physical Planning and Fisheries of Dominica; the High Commission for Water and Forest and Fight against Desertification of Morocco; the College of Agricultural Engineering of Santiago del Estero (Argentina); Group de Travail Désertification (France); Biosustentabilidad y Forraje Verde en Oaxaca (Mexico); and the University of Leeds (United Kingdom).

37. Also at the sixth meeting, chaired and moderated by Mr. Tao Wang, presentations and closing remarks were made by the following rapporteurs of session 3: Mr. Alan Grainger, University of Leeds (United Kingdom); Mr. Richard Escadafal, Institut de recherche pour le développement (France); Mr. Rajendra P. Pandey, National Institute of Hydrology (India); Mr. Sahibzada Irfanullah Khan, Sustainable Land Management Programme (Pakistan); and Mr. Richard Thomas.

38. At its seventh meeting (12 March 2015), the Committee resumed its consideration of agenda item 2 and its sub-items.

39. The Vice-Chair of the CST chaired and moderated a session on combating DLDD in Mexico.

40. Keynote addresses were delivered by Ms. Norma Salomé Munguia Aldaraca, Director General of the Primary Sector and Renewable Natural Resources of the Secretaria de Medio Ambiente y Recursos Naturales, Mexico; Mr. Jorge Rescala Pérez, Director General of the National Forestry Commission and UNCCD Focal Point, Mexico; and Jesus David Gómez Diaz, Professor at Chapingo Autonomous University and Science and Technology Correspondent to the UNCCD, Mexico.

4. Conclusion of the UNCCD 3rd Scientific Conference

41. Also at the seventh meeting of the Committee, the final session of the UNCCD 3rd Scientific Conference was chaired and moderated by Mr. Hubert.

42. Statements were made by Mr. Payne and Ms. Akthar-Schuster, in which they presented the key scientific findings and policy-oriented implications of the conference, respectively.

43. Comments were made by the representatives of the International Union for Conservation of Nature, Regional Office for West Asia, and Trent University (Canada).

44. Presentations were made by Mr. Aldrin Martin Perez Marin, Researcher, Research Coordination, National Institute for the Semi-Arid (Brazil); and Mr. Kherraz Khatim, Executive Secretary of the OSS.

45. The Vice-Chair of the CST made a statement and declared closed the UNCCD 3rd Scientific Conference.

C. Attendance

46. The representatives of the following Parties to the Convention attended the fourth special session of the Committee (see ICCD/CST(S-4)/INF.2):

Argentina
Armenia
Austria
Belarus
Bhutan
Bosnia and Herzegovina
Botswana
Brazil
Cameroon
China
Colombia
Cook Islands
Costa Rica
Côte d'Ivoire
Cuba
Democratic Republic of the Congo
Dominica
Ecuador
Eritrea
European Union
Finland
France
Gabon
Georgia
Germany
Grenada
Guyana
Hungary
India
Indonesia
Iran (Islamic Republic of)
Israel
Japan
Kazakhstan
Kenya
Kuwait
Lesotho
Madagascar
Malaysia
Mauritania
Mauritius
Mexico
Micronesia (Federated States of)
Morocco
Namibia
Niger
Pakistan
Panama
Peru
Philippines
Poland
Portugal
Republic of Korea
Republic of Moldova
Russian Federation
Samoa
Saudi Arabia
Serbia
South Africa
Sri Lanka
Switzerland
Thailand
Togo
Turkey
Turkmenistan
Uganda

Ukraine	United States of America	Venezuela (Bolivarian Republic of)
United Republic of Tanzania	Uzbekistan	Yemen

47. The session was also attended by observers from the following State not Party to the Convention:

Holy See

48. The following United Nations organizations, offices and specialized agencies were represented:

Economic Commission for Latin America and the Carribean (ECLAC)

Food and Agriculture Organization of the United Nations (FAO)

International Atomic Energy Agency (IAEA)

International Fund for Agricultural Development (IFAD)

Secretariat of the Convention on Biological Diversity (CBD)

United Nations Environment Programme (UNEP)

United Nations University (UNU)

World Meteorological Organization (WMO)

49. Six intergovernmental and 16 civil society organizations were also represented.

50. One hundred and twenty-eight scientists, also attended the CST S-4 and the UNCCD 3rd Scientific Conference, which began on 9 March 2015 and ended on 12 March 2015.

C. Documentation

51. The documents submitted for the consideration of the fourth special session of the Committee on Science and Technology are listed in the annex.

III. Action by the Committee on Science and Technology at its fourth special session on agenda items 2 to 4

A. Combating desertification/land degradation and drought for poverty reduction and sustainable development: the contribution of science, technology, traditional knowledge and practices (Agenda item 2)

52. The UNCCD 3rd Scientific Conference aimed at producing sound scientific outputs that could inform policy formulation and dialogue at the Conference of the Parties (COP). The following key scientific findings and policy-oriented implications which emerged from the conference will be transmitted to the twelfth session of the Committee on Science and Technology (CST 12) as contained in the present final report of CST S-4. Pursuant to the provisions in decision 21/COP.11, the Bureau of the CST, in conjunction with the Science-Policy Interface and in consultation with Parties and regional groups, will review the

outcomes of the conference prior to CST 12. A report on the organization and outcomes, including policy-oriented recommendations, of the UNCCD 3rd Scientific Conference will be before the Committee at its twelfth session for consideration and appropriate decisions by the COP, in conformity with the provisions of the Convention.

1. Key scientific findings

53. Land degradation is occurring in drylands today in response to stresses associated with demographic pressure, unsustainable land management practices and climate change. These stresses are increasing the vulnerability of not only ecosystems, but also the humans who depend upon them. The links that exist between climate change, land degradation, and the vulnerability of ecosystems and human populations include biophysical and human drivers, impacts and responses. Three factors influence the vulnerability of biophysical and social systems to land degradation and climate change: (1) exposure to these stresses; (2) sensitivity, or the extent to which social systems and ecosystems are likely to be modified; and (3) adaptability, or the extent to which system functionality can change such that ecosystem services and livelihoods can be maintained. The conference used a novel, participatory approach to explore links between biophysical and social systems, with an emphasis on vulnerability. Scientific presentations and exchanges were accordingly grouped into three sessions: (1) Diagnosis of constraints; (2) Responses; and (3) Monitoring and assessment. For each session, participants were asked to focus on salient questions raised in the Impulse Report[1] and make specific scientific and operational recommendations to achieve impact.

(a) Diagnosis of constraints

54. Much is known about processes of land degradation and climate change on ecosystem provisioning of food, fodder, energy and other goods. Less is understood about feedback and feedforward links between these two processes. There are an increasing number of biophysical indices for land degradation that can be estimated cost-effectively through remote-sensing. Moreover, the economic value of ecosystem services and their loss through degradation can be estimated with greater accuracy. More progress is needed, however, in the development of qualitative indices for services that cannot be easily monetized, such as cultural and spiritual indices, for these are highly relevant to such key issues as food security and sustainable land use. There is increased recognition of the importance of local and traditional knowledge in developing sustainable land management (SLM) practices to reduce vulnerability, but there is a need for operational indicators that integrate both scientific and local knowledge and allow for a better understanding of adaptive capacities. Knowledge generated from such research will allow us to better anticipate complex interactions between biophysical and social systems in specific settings. For example, climate change and land degradation will in many areas affect the presence of trees and water sources, which in many traditional societies determine who has access to land resources. Often, this access is gender-linked.

55. Greater compatibility among methods to diagnose constraints would improve our ability to share knowledge and enhance response. This includes methodologies for mapping vulnerabilities related to land degradation and climate change. Greater compatibility would facilitate downscaling of climate change scenarios to local contexts and outscaling from local to wider contexts.

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[1] Mark S. Reed and Lindsay C. Stringer (with the contribution of an international panel of experts). *Impulse Report – Climate change and desertification: Anticipating, assessing & adapting to future change in drylands* (Montpellier, France, Agropolis International, 2015). Presented at the UNCCD 3rd UNCCD Scientific Conference.

(b) Responses

56. There are several technological response options available to communities to reduce vulnerability, including better adapted crops and animals, improved integration of crop/livestock/forest systems, and more efficient use of limited resources such as water and nutrients. But to take these to scale and facilitate adoption, the perceptions of farmers must be recognized and correlated with scientific data. Farmers and other stakeholders must be involved in the identification of research problems and solutions, including best practices. Scientists and indeed policymakers must recognize that cultural and socioeconomic factors influence adaptation options. Better research and communication methodologies are needed that integrate social, economic and biophysical information, including indigenous knowledge and farmers' experiences. An up-to-date "wiki" inventory of techniques and tools for land restoration could support such efforts. An environment of co-learning that places value on "hybrid knowledge" needs to be fostered in research. Capacity development, community participation and, for some technologies, provenance trials can enhance response mechanisms. As regards market incentives, additional research is needed to assess their social, economic and environmental impacts with a special focus on institutional aspects, such as transaction costs and power relations, to assess their effectiveness in reducing vulnerability.

57. Many research and development institutions can to varying degrees identify and promote response options at different scales and for different settings. But because response options are site-specific and demand-driven, mechanisms must be sought that allow scientists and stakeholders to co-evaluate and jointly communicate success. Systems analysis, including value chain and market analyses, is needed to identify incentives and barriers to sustainable responses, including lacks of traditional and local knowledge, poor access to capital or technology, language barriers, gender inequities, property rights structures and policy environments. Regional cooperation and communication will be needed to address the links between land degradation and natural disasters such as flooding and landslides.

58. Much more research is needed on knowledge systems. Knowledge transfer, whether based on traditional knowledge, modern science, or both, is of critical importance for land management and rural development, and knowledge is dynamic, context-specific, culturally embedded, and constantly evolving. Improved and more efficient models of knowledge transfer are needed; modern Internet or cell phone technologies offer new opportunities in this regard. Better knowledge management approaches would also help develop improved methodologies for assessing adaptive capacity or the ability of local communities and societies to generate genuine resources from their interaction with their environment. This is true especially for pastoral systems. Integrated and multidisciplinary studies on the links between climate change and land degradation processes are essential.

(c) Monitoring and assessment

59. To be meaningful within the context of achieving land degradation neutrality, monitoring and evaluation (M&E) needs to have clear objectives that are of value to all stakeholders. M&E indicators that are of value to biophysical scientists or policymakers may not be meaningful to farmers or other land users who rely more on traditional knowledge or indicators. While tremendous advances are being made in the use of remote-sensing, these do not yet sufficiently benefit practitioners on the ground. If we are indeed to use "hybrid knowledge" that draws upon both modern science and traditional or local knowledge, then a long-term perspective is required that uses indicators useful to all stakeholders.

60. Research should continue to move from relatively narrow indicators, such as vegetation indices and population dynamics, to a more coherent integrated framework that

uses indicators to characterize vulnerability. Such frameworks could be used to generate information relevant to policy. More effort is needed to distinguish indicators for the state of land degradation and climate change from indicators for drivers.

61. There are many exciting developments in the field of remote-sensing that include increasingly accessible, high-resolution satellite images, inexpensive drone-mounted sensors, and crowd-sourcing using various smartphone applications. Research should aim to consolidate these developments such that monitoring and evaluation can be done at different scales and by different stakeholders. This will include continued review, testing and assessment of methodologies to best use these new types of data. It will also require new and innovative approaches to managing and combining large sets of heterogeneous data such that they are meaningful not only to scientists but also to engaged communities working to achieve land degradation neutrality. However, further efforts are needed to scientifically underpin the concept of land degradation neutrality.

(d) Conclusions

62. Human activities are recognized as a main driver of the processes of drought, land degradation, and desertification and a contributor to climate change. Society must therefore mitigate or reverse these stresses through innovative approaches to attain land degradation neutrality. The very best modern science and technology will be needed, but ultimately we must change human behavior and attitudes regarding the use of land and other natural resources.

2. Policy-oriented implications

63. Declines in productivity and other benefits from land due to climate change are accelerating and driving land degradation and desertification. As outlined in the Impulse Report, climate change makes land mismanagement visible more quickly worldwide and limits populations' abilities to generate a livelihood, particularly in the drylands. Drylands are characterized by high rainfall variability and unpredictable droughts. This has led to the development of land-use systems, governance structures and processes which reflect and respond to these uncertainties through flexibility and mobility in the use of the natural capital. In the context of globalized markets, impacts of land degradation and climate change on drylands have wider impacts across other climatic and ecological systems through migration, markets, insecurity and conflict. Policy consequently requires data on the indirect drivers of desertification.

64. Climate change is a key direct driver of land degradation. Desertification can be attributed to changing rainfall patterns and to increases in climate change-induced drought frequencies and intensities. Where land users are exposed and sensitive to changes and able to adapt, resilience can be built. When they cannot adapt, land users become vulnerable.

(a) Diagnosis of constraints

65. Intergovernmental Panel on Climate Change projections indicate the possible states of land under future climate scenarios. Correlating losses of natural capital with climate change is just as important as the detection of impacts on land that can be directly related to human activities. Investments and more evidence-based decision making over the short, medium and long-term which differentiate between direct and indirect climate change and human drivers can guide land-based adaptations options. These options can be informed by models, participatory tools and scenarios that provide evidence to policy makers and other stakeholders in useable and accessible ways.

66. Appropriate governance structures, institutions and processes are required to enable effective use of this knowledge. As land users are not necessarily land owners, property

rights can limit the effectiveness of adaptation incentives. This is especially the case for small-scale land users that are already under acute pressure from food price volatility and climate variability.

(b) Responses

67. Appropriate future governance styles at levels from the local to the international will not only have to take into account land degradation and desertification triggered by the severe exploitation of natural capital, but also the impacts of climate change. Appropriate governance, enabling the implementation of SLM at different scales, can ensure that public-private tools such as product certifications and other market-based incentives will reach their target with reduced transaction costs and stimulate behavioural changes for SLM. Science plays an important role in identifying alternative livelihood options that can foster SLM, supporting awareness-raising on the need for indices for the monetary and non-monetary values of ecosystem services. It is further important to recognize and consider traditional and local knowledge, which draw on long histories of experiences and lessons learned under variable climates and can effectively inform wider land-based adaptations. Civil society organizations and extension services need to support social learning using appropriate language and information and communication technologies. They can help build trust and understanding while reconciling the needs of local communities, consumer demands, research communities and political agendas, enabling concerted action between relevant stakeholders, and reducing the time-lag between knowledge generation and application. Involving stakeholders in the joint identification of area-specific land-based adaptations and in the co-production of knowledge with scientists is more effective than conventional top-down approaches.

68. A lack of resources is an important barrier to SLM. Land-based adaptation offers one way to harness greater financial support and make progress towards the sustainable development goals. There nevertheless remains a need to clarify how funding can be diverted into these activities, what resources are available at which scales, and for which stakeholders. The coordination of diverse stakeholder actions on the ground also requires effective governance and institutions to help ensure human well-being and justice.

69. The cross-sectoral nature of climate change, land degradation and desertification means that these combined challenges are already impacting on the nexus of food security, health, livelihood losses and poverty. This demands systems and integrated landscape approaches in the development of responses, the mainstreaming of land, climate and biodiversity to harness multiple wins, and the development of stakeholder knowledge brokering systems to share best practices.

70. Responses are needed urgently and must be informed by robust total economic valuations that include the economics of land degradation and climate change, considering the costs of action and inaction and non-monetary values. There is an important role for incentives and disincentives in avoiding maladaptations. The impacts of system transformations also bear a social cost, resulting in 'winners' and 'losers'. This is especially visible in light of increased speculation on land and large-scale land acquisitions, which will have huge social consequences from the international to the local scale, altering both access to and use of natural resources, and the land's capacity to deliver benefits to support human well-being.

(c) Monitoring and assessment

71. Satellite data offer information on change at multiple spatial scales, allowing identification of key areas for urgent, targeted interventions and providing a basis for assessing the effectiveness of SLM. Satellite data must be integrated with and validated by ground observations, using technologies such as mobile phones to engage citizens,

including women and the youth, in participatory monitoring. Capacity-building targeting the short, medium and long-term is needed to facilitate multi-stakeholder engagement in monitoring SLM.

72. Indicators for monitoring land degradation neutrality and SLM can particularly effectively assess adaptation options. A common framework assessment across the three Rio conventions would facilitate the more balanced monitoring of multiple ecosystem services and provide insight into the multiple benefits from SLM.

(d) Conclusions

73. There is not an option to do nothing. To have a fighting chance of securing communities and ecosystems and moving towards land degradation neutrality, we must enable land-based adaptation through effective multi-stakeholder partnerships and collaboration. These policy-related implications emerging from the UNCCD 3rd Scientific Conference will be provided to the Science-Policy Interface so it can prepare a policy brief for the consideration of the COP at its twelfth session.

B. Provision of scientific advice on the topic: "Explore the options to achieve land degradation neutrality in the context of sustainable development" (Agenda item 3)

74. At its eighth meeting, on 12 March 2015, the Committee considered agenda item 3, "Provision of scientific advice on the topic: "Explore the options to achieve land degradation neutrality in the context of sustainable development" and had before it notes by the secretariat contained in document ICCD/CST(S-4)/2 and Corr.1.

75. The Committee on Science and Technology (CST) was informed about progress made on the topic "Explore the options to achieve land degradation neutrality in the context of sustainable development" and exchanged preliminary views on the matter. The topic of land degradation neutrality will be considered further at the twelfth session of the CST with the aim of generating recommendations the Committee may wish to make to the Conference of the Parties.

C. Adoption of the report of the Committee on Science and Technology (Agenda item 4)

76. At its eighth meeting, on 12 March 2015, the Committee considered agenda item 4, "Adoption of the report of the Committee on Science and Technology", for which it had before it the draft report of its fourth special session (ICCD/CST(S-4)/L.1).

77. At the same meeting, on the proposal of the Chair, the Committee adopted the draft report and authorized the Rapporteur to complete the report of the session, with the assistance of the secretariat.

78. The Chair and the representative of the UNCCD secretariat made a closing statement.

79. Mr. Jesús Carrasco Gómez, the General Coordinator of the Conservation and Restoration (CONAFOR), Mexico, delivered closing remarks.

80. Statements were made by the representatives of the European Union, Benin (on behalf of the African States), Turkey and Eritrea.

81. A general statement was made by the representative of BothENDS, on behalf of civil society organizations.

82. The Chair declared closed the fourth special session of the Committee on Science and Technology.

Annex

Documents before the Committee on Science and Technology at its fourth special session

Document symbol	*Title*
ICCD/CST(S-4)/1	Provisional agenda and annotations. Note by the secretariat
ICCD/CST(S-4)/2	Report on the preparation of the UNCCD 3rd Scientific Conference on "Combating desertification/land degradation and drought for poverty reduction and sustainable development: the contribution of science, technology, traditional knowledge and practices" and progress made on the topic: "Explore the options to achieve land degradation neutrality in the context of sustainable development"
ICCD/CST(S-4)/2/Corr.1	Report on the preparation of the UNCCD 3rd Scientific Conference on "Combating desertification/land degradation and drought for poverty reduction and sustainable development: the contribution of science, technology, traditional knowledge and practices" and progress made on the topic: "Explore the options to achieve land degradation neutrality in the context of sustainable development". Corrigendum
ICCD/CST(S-4)/INF.1	Information for participants
ICCD/CST(S-4)/INF.1/Corr.1	Information for participants. Corrigendum
ICCD/CST(S-4)/INF.2	List of participants